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EXAMINER

KOVALICK, VINCENT E

ART UNIT PAPER NUMBER

2673

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Please find below and/or attached an Office communication concerning this application or proceeding.

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Office Action Summary

Application No.

09/993,413

Applicant(s)

YONEDA ET AL.

Examiner

Vincent E Kovalick

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 May 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4 and 6-13 is/are rejected.
- 7) ☒ Claim(s) 5 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

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DETAILED ACTION

Response to Request for Reconsideration

1. This Office Action is in response to Applicant's Request for Reconsideration dated May 24, 2004 in response to USPTO Final Office Action dated March 17, 2004.

Applicant's Remarks relative to claims 1-4 and 6-13 have been considered and center on the single issue wherein Applicant argues that the Hebiguchi et al. reference (USP 6,184,853) does not teach a LCD wherein the LCD frame driver drives the respective fields composing one frame so that a scanning order of the fields is discontinued at least once.

In that Applicant's arguments are based on the Hibiguchi et al. patent being invalid prior art, and the new action set forth hereinbelow is based on another prior art, Applicant's remarks relative to claims 1-4 and 6-13 are rendered moot.

Applicant's argument regarding claim 10 wherein the Japanese Patent Application No. 2000-338095 with a filing date of November 6, 2000 predates Kobayashi et al. (USP 6,602,5663) with its U.S. filing date of May 17, 2001 has merit; the Kobayashi et al. prior art has been replaced with Kondoh (USP 6,008,787) with an issue date of December 28, 1999 which predates the November 6, 2000 filing date of the original Japanese Patent Application No. (2000-338095)

Regarding Applicant's argument relative to claim 5, the objection to said claim 5 still stands in that it would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

In that new prior art is introduced in the rejection of claims 1-4 and 6-13, the Final Rejection issued March 17, 2004 is herewith withdrawn.

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Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hebiguchi et al. (USP 6,184,853) taken with Itoh et al. (USP 6,229,515).

Relative to claim 1, Hebiguchi et al. **teaches** a method of driving a display device (col. 1, lines 15-67; col. 2, lines 1-67 and col. 3, lines 1-15); Hebiguchi et al. further **teaches** a liquid crystal display (LCD) apparatus comprising: a liquid crystal display element comprised of a liquid crystal layer and having a plurality of pixels arranged in a matrix form (col. 4, lines 30-63); and a driver for dividing one frame into at least four fields and interlace-scanning the at least four fields (col. 12, lines 1-12 and col. 13, lines 6-10).

Hebiguchi et al. **does not teach** wherein said driver drives the respective fields composing one frame so that a scanning order of the fields is discontinued at least once.

Hebiguchi et al. teaches addresses the method and means for driving a matrix driving display device that displays one color by combining a plurality of basic colors.

Itoh et al. **teaches** a LCD and driving method therefor (col. 1, lines 52-67 and col. 2, lines 1-28);

Itoh et al. further **teaches** said driver drives the respective fields composing one frame so that a scanning order of the fields is discontinued at least once (col. 8, lines 10-13; col. 10, lines 16-24).

It would have been obvious to a person of ordinary skill in the art at the time of the invention

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to provide to the device as taught by Hebiguchi et al. the feature as taught by Itoh et al. in order to provide a sub-picture without line flicker through one-field skipping.

As to claim 6, Hebiguchi et al. **teaches** said LCD wherein the display element is constituted so that a plurality of liquid crystal layers are laminated, and the liquid crystal layers are scanned by said driver (col. 4, lines 30-63 and Fig. 1).

4. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hebiguchi et al. taken with Itoh et al. as applied to claim 1 in item 3 hereinabove, and further in view of Ozawa et al. (USP 6,501,454).

Relative to claim 2, Hebiguchi et al. taken with Itoh et al. **does not teach** a LCD wherein said drive drives scanning lines by means of a driving waveform having a reset period for resetting a state of liquid crystals, a selection period for selecting a final display state of the liquid crystals, and a maintaining period for establishing the state selected at the selection period.

Hebiguchi et al. taken with Itoh et al. teaches driving a matrix display device that displays one color by combining a plurality of basic colors with the means to discontinue the scanning order of the fields making up a frame.

Ozawa et al. **teaches** a LCD driving method for driving an apparatus using the LCD (col. 2, lines 32-65; col. 3, lines 1-65 and col. 4, lines 1-57); Ozawa et al. further **teaches** a LCD wherein said drive drives scanning lines by means of a driving waveform having a reset period for resetting a state of liquid crystals, a selection period (T3) for selecting a final display state of the liquid crystals, and a maintaining period (T4) for establishing the state selected at the selection period (col. 8, lines 37-67 and Fig. 4).

It would have been obvious to a person of ordinary skill in the art at the time of the invention to

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provide to the device as taught by Hebiguchi et al. taken with Itoh et al. the feature as taught by Ozawa et al. in order to provide a driving method in which various types of display patterns can be displayed with a predetermined driving voltage margin being maintained and power consumption being prevented from increasing, (Ozawa et al. col. 2, lines 32-38).

5. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hebiguchi et al taken with Itoh et al. as applied to claim 1 in item 3 hereinabove, and further in view of Tsuji et al. (USP 5,111,297).

Regarding claim 3, Hebiguchi et al. taken with Itoh et al. **does not teach** a display apparatus wherein the drive drives the respective fields so that scanning order thereof is always discontinued.

Hebiguchi et al. taken with Itoh et al. teaches driving a matrix display device that displays one color by combining a plurality of basic colors with the means to discontinue the scanning order of the fields making up a frame.

Tsuji et al. **teaches** a television receiver that performs scanning conversion(col. 2, lines 48-68 and col. 3, lines 1-62); Tsuji et al. further **teaches teach** a display apparatus wherein the drive drives the respective fields so that scanning order thereof is always discontinued (col. 4, lines 59-68 and Fig. 4). It being understood that with switch 11, in Fig. 4 remaining closed, the circuit will remain in a discontinuous scanning order.

It would have been obvious to a person of ordinary skill in the art at the time of the invention to provide to the device as taught by Hebiguchi et al. taken with Itoh et al. the feature as taught by Tsuji et al. in order to provide a sub-picture without line flicker through field skipping.

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6. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hebiguchi et al. taken with Itoh et al. as applied to claim 1 in item 3 hereinabove, and further in view of Shiba et al. (USP 5,526,014).

Regarding claim 4, Hebiguchi et al. taken with Itoh et al. **does not specifically teach** said LCD apparatus wherein said driver successively scans odd-numbered lines of the respective fields and successively scans even-numbered lines; though Hebiguchi et al. does teach the use of interlace-scanning (col. 13, lines 6-10).

Hebiguchi et al. taken with Itoh et al. teaches driving a matrix display device that displays one color by combining a plurality of basic colors with the means to discontinue the scanning order of the fields making up a frame.

Shiba et al. **teaches** a semiconductor device for driving a LCD panel (col. 4, lines 36-67 and col. 5, lines 1-3); Shiba et al. further **teaches** said LCD apparatus wherein said driver successively scans odd-numbered lines of the respective fields and successively scans even-numbered lines (col. 2, lines 36-45).

It would have been obvious to a person of ordinary skill in the art at the time of the invention to make available to the device as taught by Hebiguchi et al. taken with Itoh et al. the feature as taught by Shiba et al. in order to provide the benefit of doubling the vertical resolution of the image in turn yielding a smoother displayed image.

7. Claims 7-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hebiguchi et al. taken with Itoh et al. as applied to claim 1 in item 3 hereinabove, and further in view of Nagai et al. (USP 5,091,557).

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Relative to claim 7, Hebiguchi et al. taken with Itoh et al. **does not teach** said LCD apparatus wherein the liquid crystals included in said LCD element have memory property.

Hebiguchi et al. taken with Itoh et al. teaches driving a matrix display device that displays one color by combining a plurality of basic colors with the means to discontinue the scanning order of the fields making up a frame.

Nagai et al. **teaches** liquid crystal properties (col. 2, lines 50-67 and col. 3, lines 1-17); Nagai et al. further **teaches** said LCD apparatus wherein the liquid crystals included in said LCD element have memory property (col. 9, lines 23-27).

It would have been obvious to a person of ordinary skill in the art at the time of the invention to make available to the device as taught by Hebiguchi et al. taken with Itoh et al. the feature as taught by Nagai et al. in order to provide a LCD element with desirable memory properties thereby reducing the power consumption necessary to hold the said LCD element at a desired state.

Regarding claim 8, Nagai et al. further **teaches** said LCD apparatus wherein said liquid crystals show a cholesteric phase at room temperature (col. 15, lines 51-54).

8. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hebiguchi et al. taken with Itoh et al. as applied to claim 1 in item 3 hereinabove, and further in view of Sandoe et al. (USP 6,243,061).

Relative to claim 9, Hebiguchi et al. taken with Itoh et al. **does not teach** said LCD apparatus wherein the scanning of next field is started based on reset period end timing of one scanning line of the previous field.

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Hebiguchi et al. taken with Itoh et al. teaches driving a matrix display device that displays one color by combining a plurality of basic colors with the means to discontinue the scanning order of the fields making up a frame.

Sandoe et al. **teaches** an active matrix display device and methods of driving such (col. 3, lines 19-67 and col. 4, lines 1-56); Sandoe et al. further **teaches** said LCD apparatus wherein the scanning of next field is started based on reset period end timing of one scanning line of the previous field (col. 8, lines 5-11).

It would have been obvious to a person of ordinary skill in the art at the time of the invention to make available to the device as taught by Hebiguchi et al. taken with Itoh et al. the feature as taught by Sandoe et al. in order to generate the said reset signal indicating the start of scanning the next field to be scanned and set the proper voltages to begin the next selection period.

9. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hebiguchi et al. taken with Itoh et al. as applied to claim 1 in item 3 hereinabove, and further in view of Kondoh (USP 6,008,787).

Regarding claim 10, Hebiguchi et al. taken with Itoh et al. **does not teach** said LCD apparatus wherein the driver drives scanning lines by means of a driving waveform having a field scanning period, said field scanning period comprising, in order, a reset period for resetting a state of liquid crystals, a selection period for selecting a final display state of the liquid crystals and a maintaining period for establishing the state selected at the selection period, said driver configured to start scanning of a next field based on an end timing of a reset period of a previous field.

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Hebiguchi et al. taken with Itoh et al. teaches driving a matrix display device that displays one color by combining a plurality of basic colors with the means to discontinue the scanning order of the fields making up a frame.

Kondoh **teaches** an antiferroelectric liquid crystal panel and method for driving same (col. 3, lines 41-67; col. 4, lines 1-67 and col. 5, lines 1-4); Kondoh further **teaches** said LCD apparatus wherein the driver drives scanning lines by means of a driving waveform having a field scanning period, said field scanning period comprising, in order, a reset period for resetting a state of liquid crystals, a selection period for selecting a final display state of the liquid crystals and a maintaining period for establishing the state selected at the selection period, said driver configured to start scanning of a next field based on an end timing of a reset period of a previous field (col. 12, lines 35-62).

It would have been obvious to a person of ordinary skill in the art at the time of the invention to provide to the device as taught by Hebiguchi et al. taken with Itoh et al. the feature as taught by Kondoh in order to generate the said reset signal indicating the start of scanning the next field to be scanned and set the proper voltages to initiate the data signal selection process and then to maintain the signal until the next reset signal starting of the scanning of the next field.

10. Regarding claims 11, 12 and 13, the remarks presented above in items 3 and 7 with regard to claims 6, 7 and 8, apply equally to claims 11, 12 and 13 respectively.

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Allowable Subject Matter

11. Claim 5 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Regarding claim 5, the major difference between the teachings of the prior art of record (USP 6,184,853, Hebiguchi et al. and USP 6,501,454, Ozawea et al.) is that said prior art of record **does not teach** the LCD apparatus wherein the driver scans the scanning lines according to the equation " $S = a + nk$ ", where "S" is the scanning lines to be driven; "a" is a variable number with an initial value of "one"; "n" is a variable number with an initial value of "zero", and "k" is in integer of not less than 2.

Conclusion

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.


| | | |
|------------------|-----------|------------------|
| U. S. Patent No. | 6,414,666 | Yamakawa et al. |
| U. S. Patent No. | 5,754,153 | Mizutome et al. |
| U. S. Patent No. | 5,734,367 | Tsuboyama et al. |
| U. S. Patent No. | 5,726,679 | Kanno et al. |


Responses

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Vincent E Kovalick whose telephone number is 703 306-3020. The examiner can normally be reached on Monday-Thursday 7:30- 4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bipin Shalwala can be reached on 703 305-4938. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Vincent E. Kovalick
June 15, 2004


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